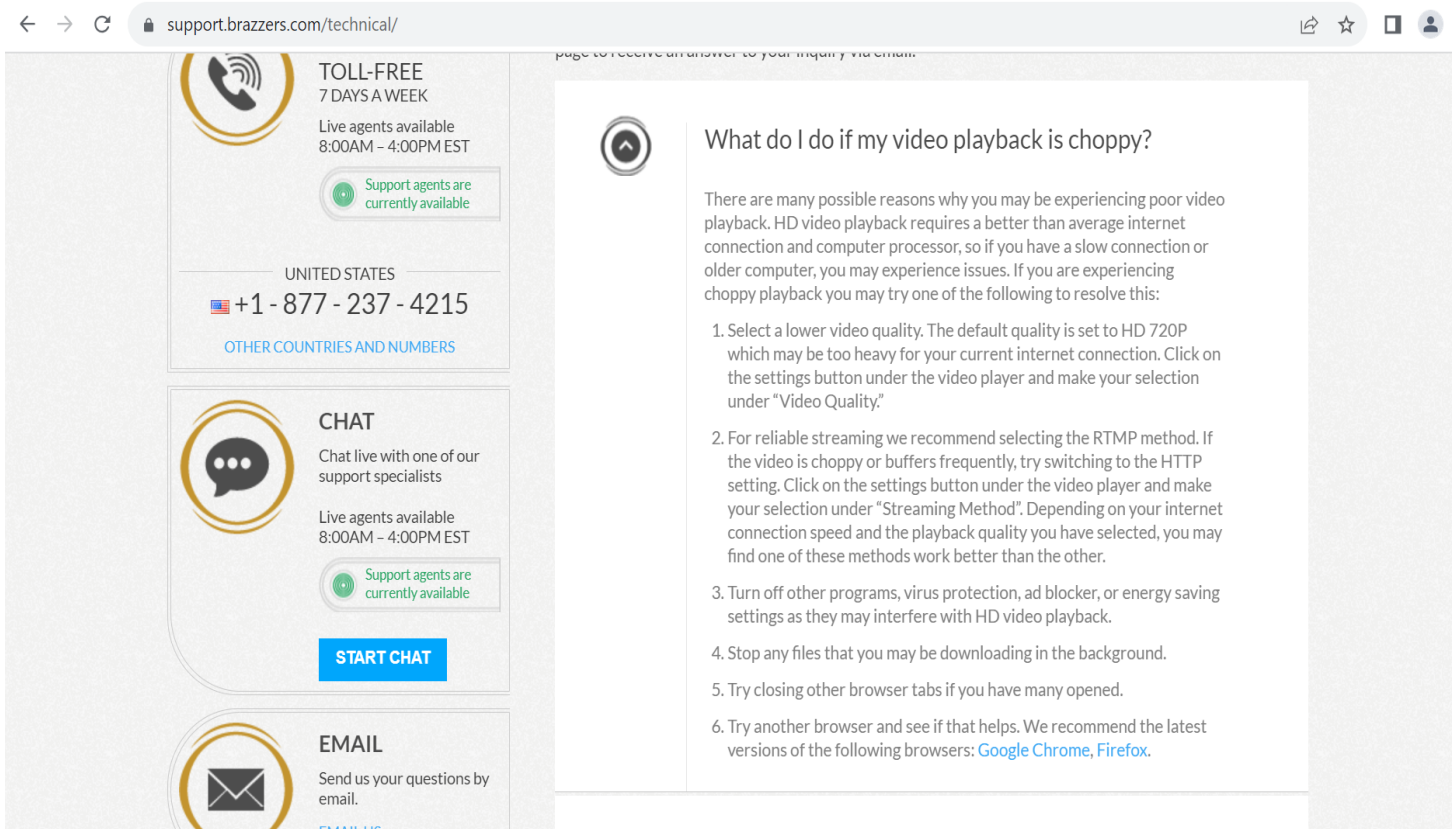# EXHIBIT O

U.S. Patent No. 11,677,798 to Brazzers

The following claim chart shows exemplary aspects of the Brazzers streaming services and products ("Brazzers") that infringe claim 1 of the '798 Patent. The chart is exemplary and should not be read to limit DISH's assertions against Brazzers, MG Premium Ltd, AYLO Premium Ltd, or any other Defendant the services or products described below. The chart should not be read to limit DISH's assertions to the patent claim charted below. Nor should the chart below be read to limit how Brazzers, MG Premium Ltd, Aylo Premium Ltd, and/or any other Defendant infringe the claim below.

Claim Element	Example Infringement Evidence
[1.pre] A system for adaptive-rate content streaming of digital content playable on one or more end user stations over the Internet, the system comprising:	Brazzers is software and Application that permits an end user content player device to stream a video over a network from a server for playback of the video. Brazzers is a website and Application executable by devices that obtains streams of a selected video program for playback. The streams are obtained from one or more video servers connecting to Brazzers over a network. As described in greater detail below, the Brazzers web player plays back programming over a network connection.
	The images in this chart are from the Brazzers website accessed through a web browser, such as Microsoft Edge or Google Chrome. In addition, the Brazzers web player is available to run on content player devices supporting all the latest versions of major web browsers. *See* https://www.support.brazzers.com/technical/ ("[Brazzers] support[s] all the latest versions of major web browsers…."). *See also id.* (shown below):

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	https://www.support.brazzers.com/technical/ Tests were conducted on videos offered over the Brazzers web player operating on a personal computer. As part of the testing, the Brazzers web player was connected to the internet through the Charles Proxy application, which enabled the ability to throttle the network's available bandwidth. Thus, the test simulated how Brazzers responded to lower and higher bandwidths. For the current test, a video titled "All Dolled Up – Try Me" was selected. When the user selects a video from the available videos, the Brazzers web player displays more details regarding the video, and provides the user with the option to view the video.

<div align="center">

U.S. Patent No. 11,677,798 to Brazzers

</div>

Claim Element	Example Infringement Evidence
	Selecting the icon corresponding to a video causes that video and other materials to be streamed and displayed on the user's device. With respect to adaptively receiving the digital stream from the video server over the network, the Brazzers web player's adaptive bitrate streams are provided to the Brazzers web player from a server over a network using the HTTP Live Streaming ("HLS") adaptive bitrate streaming protocol. HLS is "a protocol for transferring unbounded streams of multimedia data." Request For Comments: 8216 – HTTP Live Streaming, August 2017 ("RFC 8216") at 1. Using HLS, "a client can receive a continuous stream of media from a server for concurrent presentation." RFC 8216 at 4. HLS "allows a receiver to adapt the bitrate of the media to the current network conditions in order to maintain uninterrupted playback at the best possible quality." RFC 8216 at 4. With HLS, "[c]lients should switch between different Variant Streams to adapt to network conditions." RFC 8216 at 5. As explained in further detail below, Brazzers provides a system for adaptive-rate internet streaming of digital content playable on an end user device.
[1.1] at least one storage device storing digital content,	Brazzers accesses streams of video programs that are stored on one or more servers over a network. As shown by the Charles Proxy application file, partially reproduced below, the streamlet video files are hosted on a server and available at **stream-private-ht.project1content.com**.

Method	Host	Path[1]	…	Status
GET	stream-private-ht.project1content.com	/hls/b16/7ee/fd6/36a/456/6ae/85c/893/013/78d/99/video/scene,_320p,_480p,_720p,_1080p,_2160p,.mp4.urlset/seg-70-f3-v1-a1.ts?...	…	Complete

---

[1] Video path abbreviated for readability throughout.

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence				
	GET	stream-private-ht.project1content.com	/hls/b16/7ee/fd6/36a/456/6ae/85c/893/013/78d/99/video/scene,_320p,_480p,_720p,_1080p,_2160p,.mp4.urlset/seg-71-f3-v1-a1.ts?...	…	Complete
	GET	stream-private-ht.project1content.com	/hls/b16/7ee/fd6/36a/456/6ae/85c/893/013/78d/99/video/scene,_320p,_480p,_720p,_1080p,_2160p,.mp4.urlset/seg-72-f3-v1-a1.ts?...	…	Complete
	GET	stream-private-ht.project1content.com	/hls/b16/7ee/fd6/36a/456/6ae/85c/893/013/78d/99/video/scene,_320p,_480p,_720p,_1080p,_2160p,.mp4.urlset/seg-73-f3-v1-a1.ts?...	…	Complete
[1.2] the digital content encoded at a plurality of different bit rates creating a plurality of streams including a first bit rate stream, a second bit rate	The one or more servers accessible by the Brazzers web player store streamlets corresponding to particular segments of a video program, and each streamlet is encoded at one of numerous resolutions. The one or more servers stores streamlet files that, together, comprise a plurality of streams of the video program. Each of the stored streams comprises a plurality of streamlets at the same resolution, and the variant playlists hosting the stored streamlets ensure the sequential playback of the streams at a resolution supported by the available network bandwidth. The numerous streams of the video program accessible by the Brazzers web player include a low quality stream, a medium quality stream, and a high quality stream.				

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
stream, and a third bit rate stream,	For example, in the instant test of a video titled "All Dolled Up—Try Me," the Brazzers web player made an HTTP GET request to **stream-private-ht.project1content.com** for a master manifest located at the following path: **/hls/b16/7ee/fd6/36a/456/6ae/85c/893/013/78d/99/video/scene,_320p,_480p,_720p,_1080p,_2160p,.mp4.urlset/master.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D** (hereafter referred to as the "**Master Manifest**" or "**master.m3u8**"). The Master Manifest returned the following contents:

```
#EXTM3U

#EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=915420,RESOLUTION=568x320,FRAME-
RATE=23.974,CODECS="avc1.64001f,mp4a.40.2"

index-f1-v1-
a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

#EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=1654630,RESOLUTION=854x480,FRAME-
RATE=23.974,CODECS="avc1.64001f,mp4a.40.2"

index-f2-v1-
a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

#EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=3023543,RESOLUTION=1280x720,FRAME-
RATE=23.974,CODECS="avc1.64001f,mp4a.40.2"

index-f3-v1-
a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

#EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=4816531,RESOLUTION=1920x1080,FRAME-
RATE=23.974,CODECS="avc1.640032,mp4a.40.2"

index-f4-v1-
a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
```

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence	
	#EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=6660563,RESOLUTION=3840x2160,FRAME-RATE=23.974,CODECS="avc1.640033,mp4a.40.2" index-f5-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D	

File path: **master.m3u8**

The master playlist shows five versions of the video stream at the following bandwidths:

- 915420 (referred to herein as "**915420 Bandwidth**") having a resolution of 568x320
- 1654630 (referred to herein as "**1654630 Bandwidth**") having a resolution of 854x480
- 3023543 (referred to herein as "**3023543 Bandwidth**") having a resolution of 1280x720
- 4816531 (referred to herein as "**4816531 Bandwidth**") having a resolution of 1920x1080
- 6660563 (referred to herein as "**6660563 Bandwidth**") having a resolution of 3840x1260

For each of these versions, the master playlist provides a link to a playlist for the specified version of the selected video program at a particular bandwidth and resolution. Each version playlist is defined by the token associated with the stream file path. For example:

Bandwidth	Token[2]
915420 Bandwidth	index-f1-v1-a1.m3u8?...

---

[2] Token abbreviated for readability. The abbreviated portions of each token are the same across all bandwidth versions.

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence	
	1654630 Bandwidth	index-f2-v1-a1.m3u8?...
	3023543 Bandwidth	index-f3-v1-a1.m3u8?...
	4816531 Bandwidth	index-f4-v1-a1.m3u8?...
	6660563 Bandwidth	index-f5-v1-a1.m3u8?...

Each of the bandwidth streams includes segments that encode the same portion of the video at various qualities. For example, the **915420 Bandwidth** version can be considered a low-quality stream, the **1654640 Bandwidth** version can be considered a medium-quality stream, and the **3023543 Bandwidth** version can be considered a high-quality stream.

Brazzers uses HTTPS GET requests to retrieve the segments, or streamlets, of the encoded video specified in the file above.

The Media Playlist for each of the Variant Streams identifies a group of streamlets associated with each of the different copies, as the exemplary Media Playlist shown below illustrates. *See* RFC 8216 at 38 ("The server must create a Media Playlist file (Section 4) that contains a URI for each Media Segment that the server wishes to make available, in the order in which they are to be played."); *see also* RFC 8216 at 4 ("A multimedia presentation is specified by a Uniform Resource Identifier (URI) [RFC3986] to a Playlist."); RFC 8216 at 4 ("A Media Playlist contains a series of Media Segments that make up the overall presentation. A Media Segment is specified by a URI and optionally a byte range.").

As shown in the test data, Brazzers selects the **3023543 Bandwidth** version of the stream and makes a request for the corresponding playlist. The Brazzers Server(s) returns the playlist file with the following contents:

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence	
	#EXTM3U	
	#EXT-X-TARGETDURATION:4	
	#EXT-X-ALLOW-CACHE:YES	
	#EXT-X-PLAYLIST-TYPE:VOD	
	#EXT-X-VERSION:3	
	#EXT-X-MEDIA-SEQUENCE:1	
	#EXTINF:3.000,	
	seg-1-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D	
	#EXTINF:4.000,	
	seg-2-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D	
	#EXTINF:4.000,	
	seg-3-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D	
	#EXTINF:4.000,	
	seg-4-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D	
	#EXTINF:4.000,	

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-5-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D [***] #EXTINF:4.000, seg-556-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-557-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-558-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:0.616, seg-559-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-ENDLIST As noted above, the variant playlist file is a HLS playlist. Each line in the file path "index-f3-v1-a1.m3u8?..." that begins with "#EXTINF" specifies the length of the segments in seconds. The line below the #EXTINF file

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	is the location of the video file. In the variant playlist shown above, the segments of the video are separated by commercial segments. Each of the streamlets (except the first and final streamlets of each playlist) is 4.000 seconds long and returns sequential segments of the video program and/or commercial. As long as the viewer stays on the channel and the bandwidth is adequate to support the chosen resolution, Brazzers will continue to request and receive playlists corresponding to the current, chosen resolution.
[1.3] wherein the first bit rate stream, the second bit rate stream, and the third bit rate stream each comprise a group of streamlets encoded at a respective one of the plurality of different bit rates,	Brazzers videos are encoded at a plurality of different bitrates to create a plurality of streams including at least low, medium, and high quality streams. Each of the low, medium, and high quality streams has a streamlet that encodes the same portion of the video at a different one of the plurality of different bitrates. Each of the streamlets comprising the low, medium, and high, quality streams are stored in variant playlists comprising a group of streamlets of the same quality at a respective bit rate. In the instant test, a personal computer accessing the Brazzers web player through a web browser makes a HTTPS GET request to **stream-private-ht.project1content.com** for the Master Manifest. As shown in the excerpts of the Master Manifest below, the video available is encoded at 5 different bitrates. #EXTM3U #EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=915420,RESOLUTION=568x320,FRAME-RATE=23.974,CODECS="avc1.64001f,mp4a.40.2" index-f1-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=1654630,RESOLUTION=854x480,FRAME-RATE=23.974,CODECS="avc1.64001f,mp4a.40.2"

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	index-f2-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=3023543,RESOLUTION=1280x720,FRAME-RATE=23.974,CODECS="avc1.64001f,mp4a.40.2" index-f3-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=4816531,RESOLUTION=1920x1080,FRAME-RATE=23.974,CODECS="avc1.640032,mp4a.40.2" index-f4-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-STREAM-INF:PROGRAM-ID=1,BANDWIDTH=6660563,RESOLUTION=3840x2160,FRAME-RATE=23.974,CODECS="avc1.640033,mp4a.40.2" index-f5-v1-a1.m3u8?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

File path: **master.m3u8**

The master playlist shows five versions of the video stream at the following bandwidths:

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	• 915420 (referred to herein as "**915420 Bandwidth**") having a resolution of 568x320 • 1654630 (referred to herein as "**1654630 Bandwidth**") having a resolution of 854x480 • 3023543 (referred to herein as "**3023543 Bandwidth**") having a resolution of 1280x720 • 4816531 (referred to herein as "**4816531 Bandwidth**") having a resolution of 1920x1080 • 6660563 (referred to herein as "**6660563 Bandwidth**") having a resolution of 3840x1260 For each of these versions, the master playlist provides a link to a playlist for the specified version of the selected video program at a particular bandwidth and resolution. Each version playlist is defined by the token associated with the stream file path. For example: <table><tr><th>Bandwidth</th><th>Token</th></tr><tr><td>**915420 Bandwidth**</td><td>index-f1-v1-a1.m3u8?...</td></tr><tr><td>**1654630 Bandwidth**</td><td>index-f2-v1-a1.m3u8?...</td></tr><tr><td>**3023543 Bandwidth**</td><td>index-f3-v1-a1.m3u8?...</td></tr><tr><td>**4816531 Bandwidth**</td><td>index-f4-v1-a1.m3u8?...</td></tr><tr><td>**6660563 Bandwidth**</td><td>index-f5-v1-a1.m3u8?...</td></tr></table> Each of the bandwidth streams includes segments that encode the same portion of the video at various qualities. For example, the **915420 Bandwidth** version can be considered a low-quality stream, the **1654640 Bandwidth**

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	version can be considered a medium-quality stream, and the **3023543 Bandwidth** version can be considered a high-quality stream. Brazzers uses HTTPS GET requests to retrieve the segments, or streamlets, of the encoded video specified in the file above.

Bandwidth	Streamlet
915420 Bandwidth	#EXTM3U #EXT-X-TARGETDURATION:4 #EXT-X-ALLOW-CACHE:YES #EXT-X-PLAYLIST-TYPE:VOD #EXT-X-VERSION:3 #EXT-X-MEDIA-SEQUENCE:1 #EXTINF:3.000, seg-1-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-2-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element		Example Infringement Evidence
		seg-3-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-4-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-5-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	3023543 Bandwidth	#EXTM3U #EXT-X-TARGETDURATION:4 #EXT-X-ALLOW-CACHE:YES #EXT-X-PLAYLIST-TYPE:VOD #EXT-X-VERSION:3 #EXT-X-MEDIA-SEQUENCE:1 #EXTINF:3.000, seg-1-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-2-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-3-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-4-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-5-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

On information and belief, playlists for the other resolution variants also include these segments, which correspond to the same portion of the video provided on-demand from the Brazzers web player's Server(s).

Each of the low-quality stream, medium-quality stream, and high-quality stream comprise a group of streamlets that are encoded at the same respective one of the different bitrates. As set forth above, each of the Variant Streams "describes a different version of the same content." RFC 8216 at 5. Thus, each of the Variant Streams are "encodings of the same presentation" at different bitrates. RFC 8216 at 42. Indeed, to allow "clients to switch between" Variant Streams seamlessly, HLS requires that "[e]ach Variant Stream MUST present the same content" on playback. RFC 8216 at 43. And, HLS provides that "[m]atching content in Variant Streams MUST have matching timestamps" to allow the Brazzers web player to synchronize the media. *Id*. Further, "[e]ach

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	Media Segment in a Media Playlist has an integer Discontinuity Sequence Number. The Discontinuity Sequence Number can be used in addition to the timestamps within the media to synchronize Media Segments across different Renditions." RFC 8216 at 39. Thus, "[m]atching content in Variant Streams MUST have matching Discontinuity Sequence Numbers." RFC 8216 at 43. The video server stores the video wherein "each of the low quality stream, the medium quality stream, and the high quality stream comprising a group of streamlets." The HLS protocol indicates that "[a] Media Playlist contains a list of Media Segments, which, when played sequentially, will play the multimedia presentation." RFC 8216 at 4; *see also* RFC 8216 at 5 ("To play this Playlist, the client first downloads it and then downloads and plays each Media Segment declared within it. The client reloads the Playlist as described in this document to discover any added segments."); RFC 8216 at 4 ("A Media Playlist contains a series of Media Segments that make up the overall presentation."). Each of the Media Segments in HLS yields a different portion of the video on playback. For example, HLS provides that "[e]ach segment in a Media Playlist has a unique integer Media Sequence Number. The Media Sequence Number of the first segment in the Media Playlist is either 0 or declared in the Playlist (Section 4.3.3.2). The Media Sequence Number of every other segment is equal to the Media Sequence Number of the segment that precedes it plus one." RFC 8216 at 6. As such, "[e]ach Media Segment MUST carry the continuation of the encoded bitstream from the end of the segment with the previous Media Sequence Number, where values in a series such as timestamps and Continuity Counters MUST continue uninterrupted." RFC 8216 at 6. Thus, each of the streamlets in a set must yield a different portion of the video on playback. The streamlets across the different copies yield the same portions of the video on playback. As set forth above, each of the Variant Streams "describes a different version of the same content." RFC 8216 at 5. Thus, each of the Variant Streams are "encodings of the same presentation" at different bitrates. RFC 8216 at 42. Indeed, to allow "clients to switch between" Variant Streams seamlessly, HLS requires that "[e]ach Variant Stream MUST present the same content" on playback. RFC 8216 at 43.
[1.4] each group of streamlets comprising at least	As explained above, Brazzers videos are encoded at a plurality of different bitrates to create a plurality of streams including at least low, medium, and high quality streams. Each of the low, medium, and high quality streams has a streamlet that encodes the same portion of the video at a different one of the plurality of different

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
first and second streamlets, each of the streamlets corresponding to a portion of the digital content;	bitrates. Each of the streamlets comprising the low, medium, and high, quality streams are stored in variant playlists comprising a group of streamlets of the same quality at a respective bit rate. The Master Playlist shows five versions of the video stream at the following bandwidths: • 915420 (referred to herein as "**915420 Bandwidth**") having a resolution of 568x320 • 1654630 (referred to herein as "**1654630 Bandwidth**") having a resolution of 854x480 • 3023543 (referred to herein as "**3023543 Bandwidth**") having a resolution of 1280x720 • 4816531 (referred to herein as "**4816531 Bandwidth**") having a resolution of 1920x1080 • 6660563 (referred to herein as "**6660563 Bandwidth**") having a resolution of 3840x1260 For each of these versions, the master playlist provides a link to a playlist for the specified version of the selected video program at a particular bandwidth and resolution. Each version playlist is defined by the token associated with the stream file path. For example:

Bandwidth	Token
915420 Bandwidth	index-f1-v1-a1.m3u8?...
1654630 Bandwidth	index-f2-v1-a1.m3u8?...
3023543 Bandwidth	index-f3-v1-a1.m3u8?...
4816531 Bandwidth	index-f4-v1-a1.m3u8?...
6660563 Bandwidth	index-f5-v1-a1.m3u8?...

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	Brazzers uses HTTPS GET requests to retrieve the segments, or streamlets, of the encoded video specified in the file above.

Bandwidth	Streamlet
915420 Bandwidth	#EXTM3U
	#EXT-X-TARGETDURATION:4
	#EXT-X-ALLOW-CACHE:YES
	#EXT-X-PLAYLIST-TYPE:VOD
	#EXT-X-VERSION:3
	#EXT-X-MEDIA-SEQUENCE:1
	#EXTINF:3.000,
	seg-1-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,
	seg-2-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,
	seg-3-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

U.S. Patent No. 11,677,798 to Brazzers

Claim Element		Example Infringement Evidence
		#EXTINF:4.000, seg-4-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-5-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	3023543 Bandwidth	#EXTM3U #EXT-X-TARGETDURATION:4 #EXT-X-ALLOW-CACHE:YES #EXT-X-PLAYLIST-TYPE:VOD #EXT-X-VERSION:3 #EXT-X-MEDIA-SEQUENCE:1 #EXTINF:3.000, seg-1-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-2-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	#EXTINF:4.000, seg-3-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-4-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXTINF:4.000, seg-5-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

On information and belief, playlists for the other resolution variants also include these segments, which correspond to the same portion of the video provided on-demand from the Brazzers web player's Server(s).

Each of the low-quality stream, medium-quality stream, and high-quality stream comprise a group of streamlets that are encoded at the same respective one of the different bitrates. As set forth above, each of the Variant Streams "describes a different version of the same content." RFC 8216 at 5. Thus, each of the Variant Streams are "encodings of the same presentation" at different bitrates. RFC 8216 at 42. Indeed, to allow "clients to switch between" Variant Streams seamlessly, HLS requires that "[e]ach Variant Stream MUST present the same content" on playback. RFC 8216 at 43. And, HLS provides that "[m]atching content in Variant Streams MUST have matching timestamps" to allow the Brazzers web player to synchronize the media. *Id*. Further, "[e]ach Media Segment in a Media Playlist has an integer Discontinuity Sequence Number. The Discontinuity Sequence Number can be used in addition to the timestamps within the media to synchronize Media Segments across

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	different Renditions." RFC 8216 at 39. Thus, "[m]atching content in Variant Streams MUST have matching Discontinuity Sequence Numbers." RFC 8216 at 43. For the instant test, the Brazzers web player requests and receives the streamlets corresponding to the portion of the video program to be viewed, here, All Dolled Up – Try Me Edition". Below is an excerpt of the Charles "Sequence" listing showing the same alongside the status of the requests: {table below} As shown above, the Brazzers web player initially requests the **915420 Bandwidth** version of the test video but, upon a determination of the network's ability to support higher resolutions, switches to requesting (and seamlessly providing) the **3023543 Bandwidth** version of the test video in subsequent streamlets.
[1.5] wherein at least one of the first bit rate stream, the second bit rate stream, and the third bit rate	At least one of the low, medium, and high-quality streams of the Brazzers-provided video is encoded at a bit rate of no less than 600 kbps. The master playlist shows five versions of the video stream at the following bandwidths: ● 915420 (referred to herein as "**915420 Bandwidth**") having a resolution of 568x320 ● 1654630 (referred to herein as "**1654630 Bandwidth**") having a resolution of 854x480

Method	Host	Path	…	Status
GET	stream-private-ht.project1content.com	…/hls/…/seg-1-f1-v1-a1.ts?...	…	Complete
GET	stream-private-ht.project1content.com	…/hls/…/seg-2-f3-v1-a1.ts?...	…	Complete
GET	stream-private-ht.project1content.com	…/hls/…/seg-3-f3-v1-a1.ts?...	…	Complete
GET	stream-private-ht.project1content.com	…/hls/…/seg-4-f3-v1-a1.ts?...	…	Complete

Claim Element	Example Infringement Evidence
stream is encoded at a bit rate of no less than 600 kbps; and	• 3023543 (referred to herein as "**3023543 Bandwidth**") having a resolution of 1280x720 • 4816531 (referred to herein as "**4816531 Bandwidth**") having a resolution of 1920x1080 • 6660563 (referred to herein as "**6660563 Bandwidth**") having a resolution of 3840x1260
[1.6] wherein the first streamlet of each of the groups has the same first duration and encodes the same first temporal portion of the digital content in each of the first bit rate stream, the second bit rate stream, and the third bit rate stream, and	For the Brazzers video, the streamlet encoding the same portion of the video in the low quality stream has an equal playback duration as the streamlet encoding the same portion of the video in the high quality stream. Each of the Variant Streams "describes a different version of the same content." RFC 8216 at 5. Thus, each of the Variant Streams are "encodings of the same presentation" at different bitrates. RFC 8216 at 42. Indeed, to streamlet encoding the same portion of the video in the high quality stream; allow "clients to switch between" Variant Streams seamlessly, HLS requires that "[e]ach Variant Stream MUST present the same content" on playback. RFC 8216 at 43. Further, HLS provides that "[m]atching content in Variant Streams MUST have matching timestamps" to allow Brazzers to synchronize the media. RFC 8216 at 43. And, "[e]ach Media Segment in a Media Playlist has an integer Discontinuity Sequence Number. The Discontinuity Sequence Number can be used in addition to the timestamps within the media to synchronize Media Segments across different Renditions." RFC 8216 at 39. Thus, "[m]atching content in Variant Streams MUST have matching Discontinuity Sequence Numbers." RFC 8216 at 43. As noted above, the variant playlist file is an HLS playlist. Each line in the file that begins with "#EXTINF" specifies the length of the segments in seconds. The line below the #EXTINF file is the location of the video file. In the present test, the Brazzers web player uses HTTPS GET requests to request and retrieve the segments of the encoded stream specified in the file above. The video files are hosted at **stream-private-ht.project1content.com**, and each streamlet (except the first and final streamlets) is 4.000 seconds long. The received playlists at each resolution includes video streamlets, such as: "seg-1-f[**X**]-v1-a1.ts," "seg-2-f[**X**]-v1-a1.ts," "seg-3-f[**X**] -v1-a1.ts," "seg-4-f[**X**]-v1-a1.ts," and "seg-5-f[**X**]-v1-a1.ts," where [**X**] corresponds to a unique identifier for each bandwidth version. Within each bandwidth playlist file, there are the 559 .ts files, each corresponding to the same segmented moments in the video. <table><tr><th>Bandwidth Version</th><th>File line (**#EXTINF: length**) (<u>same portion of live stream</u>)</th></tr></table>

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence	
	915420 Bandwidth	#EXTM3U
		#EXT-X-TARGETDURATION:4
		#EXT-X-ALLOW-CACHE:YES
		#EXT-X-PLAYLIST-TYPE:VOD
		#EXT-X-VERSION:3
		#EXT-X-MEDIA-SEQUENCE:1
		#EXTINF:3.000,
		seg-1-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:4.000,
		seg-2-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:4.000,
		seg-3-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:4.000,
		seg-4-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:4.000,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-5-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D [***] **#EXTINF:4.000,** seg-556-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-557-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-558-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D **#EXTINF:0.616,** seg-559-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D #EXT-X-ENDLIST
3023543 Bandwidth	#EXTM3U #EXT-X-TARGETDURATION:4

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	#EXT-X-ALLOW-CACHE:YES
	#EXT-X-PLAYLIST-TYPE:VOD
	#EXT-X-VERSION:3
	#EXT-X-MEDIA-SEQUENCE:1
	#EXTINF:3.000,
	seg-1-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,
	seg-2-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,
	seg-3-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,
	seg-4-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
	#EXTINF:4.000,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-5-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D [***] **#EXTINF:4.000**, seg-556-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**, seg-557-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**, seg-558-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:0.616**, seg-559-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D #EXT-X-ENDLIST
	On information and belief, the other bandwidth file playlists also comprise 559 streamlets, each corresponding to the same portion of video as is respective counterpart in the streamlet files shown above.

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	As provided above, HLS requires that "[m]atching content in Variant Streams MUST have matching timestamps" to allow Brazzers to synchronize the media. RFC 8216 at 43; *see also* RFC 8216 at 43 ("Matching content in Variant Streams MUST have matching Discontinuity Sequence Numbers."). The matching timestamps and Discontinuity Sequence Numbers for matching content across the Variant Streams are "in relation to the beginning of the video." For example, HLS requires that "[e]ach Media Segment MUST carry the continuation of the encoded bitstream from the end of the segment with the previous Media Sequence Number, where values in a series such as timestamps and Continuity Counters MUST continue uninterrupted." RFC 8216 at 6; *see also* RFC 8216 at 45 ("A client MUST NOT assume that segments with the same Media Sequence Number in different Variant Streams or Renditions have the same position in the presentation; Playlists MAY have independent Media Sequence Numbers. Instead, a client MUST use the relative position of each segment on the Playlist timeline and its Discontinuity Sequence Number to locate corresponding segments."). Indeed, to adapt playback between different bitrate Variant Streams, the Brazzers web player "can use the EXTINF durations and the constraints in Section 6.2.4 to determine the approximate location of corresponding media. Once media from the new Variant Stream has been loaded, the timestamps in the Media Segments can be used to synchronize the old and new timelines precisely." RFC 8216 at 47.
[1.7] wherein the first streamlet of the first bit rate stream encodes the same first temporal portion of the digital content at a different bit rate than the first streamlet of the second bit rate	As explained above, each streamlet encoding the same portion of the video in the low quality stream has an equal playback duration as the streamlet encoding the same portion of the video in the high quality stream. Each of the Variant Streams "describes a different version of the same content." RFC 8216 at 5. Thus, each of the Variant Streams are "encodings of the same presentation" at different bitrates. RFC 8216 at 42. Indeed, to streamlet encoding the same portion of the video in the high quality stream; allow "clients to switch between" Variant Streams seamlessly, HLS requires that "[e]ach Variant Stream MUST present the same content" on playback. RFC 8216 at 43. Further, HLS provides that "[m]atching content in Variant Streams MUST have matching timestamps" to allow Brazzers to synchronize the media. RFC 8216 at 43. And, "[e]ach Media Segment in a Media Playlist has an integer Discontinuity Sequence Number. The Discontinuity Sequence Number can be used in addition to the timestamps within the media to synchronize Media Segments across

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
stream and the first streamlet of the third bit rate stream.	different Renditions." RFC 8216 at 39. Thus, "[m]atching content in Variant Streams MUST have matching Discontinuity Sequence Numbers." RFC 8216 at 43. As noted above, the variant playlist file is an HLS playlist. Each line in the file that begins with "#EXTINF" specifies the length of the segments in seconds. The line below the #EXTINF file is the location of the video file. In the present test, the Brazzers web player uses HTTPS GET requests to request and retrieve the segments of the encoded stream specified in the file above. The first streamlet of each of the variant playlists used to stream the video titled "All Dolled Up—Try Me" are the same duration (3.000 seconds) and encode the same portion of the video. The video streamlet files are hosted at **stream-private-ht.project1content.com**. This is illustrated below:

Bandwidth Version	File line (**#EXTINF: length**) (<u>same portion of live stream</u>)
915420 Bandwidth	#EXTM3U #EXT-X-TARGETDURATION:4 #EXT-X-ALLOW-CACHE:YES #EXT-X-PLAYLIST-TYPE:VOD #EXT-X-VERSION:3 #EXT-X-MEDIA-SEQUENCE:1 **#EXTINF:3.000**, <u>seg-1</u>-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-2-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-3-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-4-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-5-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D [***] **#EXTINF:4.000,** seg-556-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000,** seg-557-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence	
		#EXTINF:4.000,
		seg-558-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:0.616,
		seg-559-f1-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXT-X-ENDLIST
	3023543 Bandwidth	#EXTM3U
		#EXT-X-TARGETDURATION:4
		#EXT-X-ALLOW-CACHE:YES
		#EXT-X-PLAYLIST-TYPE:VOD
		#EXT-X-VERSION:3
		#EXT-X-MEDIA-SEQUENCE:1
		#EXTINF:3.000,
		seg-1-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D
		#EXTINF:4.000,
		seg-2-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	#EXTINF:4.000, seg-3-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**, seg-4-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**, seg-5-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D [***] **#EXTINF:4.000**, seg-556-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**, seg-557-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JKFSmRbzI3Zs4%3D **#EXTINF:4.000**,

U.S. Patent No. 11,677,798 to Brazzers

Claim Element	Example Infringement Evidence
	seg-558-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D **#EXTINF:0.616**, seg-559-f3-v1-a1.ts?validto=1691016383&ip=108.223.180.169&hash=v70AOyHrYt%2FsO7JK FSmRbzI3Zs4%3D #EXT-X-ENDLIST

On information and belief, playlists for the other resolution variants also include these segments, which correspond to the same portion of the video provided on-demand from the Brazzers web player's Server(s).